Buildings Technology Research and Development Subcommittee

October 13th, 2011

Location: 950 L'Enfant Plaza DOE
Time: 1:30-2:30 p.m.

Senior Principals	**Agency/Office**	
William Grosshandler	DOC/NIST	BTRD Co-chair
Roland Risser	DOE/EE-Buildings	BTRD Co-chair
Paul Domich	BTRD Ex-Sec	
Charles Iliff	AOC	
Laura Janet	CDC	
Angela Wagner	CDC	
Ab Ream	DOE	
George Hernandez	DOE	
Jerry Dion	DOE	
Joseph Hagerman	DOE	
Saralyn Bunch	DOE	
Caterina Hatcher	EPA	
Dale Manty	EPA	
Judith Heerwagen	GSA	
Kevin Kampschroer	GSA	
Kinga Porst	GSA	
Patrick Fee	GSA	
Don Meyer	GSA	
Alfred Cypress	HHS	
Jonathan Herz	HHS	
Stephen Christopher	HHS	
Greg Leifer	NIH	
Natasha Milesi-Ferretti	NIST	
Martin J. Savoie	USACE	
Teresa C. Schubert	USPS	

Next Meeting: October 13, 2011 2:00-4:00 PM, 950 L'Enfant Plaza DOE

Meeting Calendar:

October 13, 2011 November 17, 2011	December 15, 2011

Introductions: Subcommittee Co-Chair William Grosshandler (NIST) opened the monthly meeting of the Subcommittee for Buildings Technology Research and Development (BTRD) welcoming the agency representatives and thanking them for their participation. All participants provided self-introductions.

GSA "Research into Practice": Judith Heerwagen (GSA). , GSA's Office of Federal High Performance Green Buildings supported two keystone activities in 2011:
(1) Commissioned a report on *Achieving High Performance Federal Facilities* by the National Academies of Science. The report identifies specific levers with the greatest potential for transformational change.
(2) Convened an expert workshop to identify ways to overcome barriers and create adoption pathways to expand the purchase, installation, and effective use of thermal and lighting technologies that are known to produce significant energy savings.
These two activities are focused on gaining higher rates of adoption of the technologies, practices and strategies that could significantly reduce the environmental footprint of federal buildings but not being implemented despite research supporting their viability.

GSA is looking to develop an integrated system that facilitates the dispersal and adoption of technologies, practices, and strategies focused around sustainable and cost effective building operations.

- The approach involves multiple relationships, mixed modes of communication, continuous adaptation, and feedback for improvement.
- This is not a typical "post it" and leave approach. Information will be updated and maintained.
- The approach facilitates "learning by using," adapting and changing much as a living system learns and adapts.
- Facilitates "swarm intelligence" – collective intelligence of best practices through collaboration and pooling of expertise.

The system includes five phases – the development of a strategy, operational experiences to identify and document the pathways/opportunities, developing the appropriate types of educational materials relevant to each particular audience, implementing the strategy and guidance, and measuring the results.
Organizations contributing to this system include: the GSA, DOD, and VA portfolios of buildings combined with inputs from the DOE Labs and universities. The system will eventually be extended to all federal building types.

Based on the outcomes of an expert panel convened by NAS and GSA, key barriers were identified:

- Lack of integration across the retrofit process.
- High levels of risk aversion.
- Lack of focus on performance outcomes or life cycle analysis.
- Procurement that focuses on lowest cost.
- Skepticism or lack of knowledge about research findings.

- Research focused on researchers – not end users. Translation issues abound.
- Research results and best practices not getting to the right people – those who can use the information to make decisions.

Participants identified five promising lighting and thermal conditioning technologies, strategies, or practices that they believe are vital to energy reduction solutions.

- Lighting:
  - Benchmarking / total energy audits
  - Bundled lighting solutions
  - Education
  - Energy-efficient lighting fixtures and systems
  - Occupancy sensors
- Thermal Conditioning:
  - Cool roofs
  - Task/ambient approaches with personal-controlled conditioning
  - Façade upgrades
  - Monitoring energy comfort with standardized methods
  - Retro-commissioning with continuous commissioning

GSA is also looking for a communication an education strategy and plan that would increase the adoption of HP technologies, practices and strategies focused on the facility manager, energy managers, and project managers.

- Within the communication plan, there are three categories of messages:
- Awareness
  - Messages crafted to inform the intended audience on a variety of topics
- Status
  - Messages that provide information related to the project and its management
- Education
  - Messages that teach new skills or increase the knowledge of the audience

The Performance-based Contracts Workshop of September 2011 contributed materials that will be included in the system. Nest steps for the system are:

- Create content using existing research (labs, universities, private sector, OFHPGB projects)
- Expand collaborative partnerships to assure the best information is identified and translated to best practices, guidance, stories, case studies, apps
- Link to other valuable content already on the web (DOE, Fed Center, EPA)
- Feed content into the information ecosystem

  - Sustainable Facilities Tool (new whole building component launched in 2012)
  - Interact collaboration site
  - You Tube
  - Meetings/conferences/training with high value audiences
- Create and implement evaluation plan to assess adoption and impact.

GSA Performance-based Contracts Activity: Based on the results from the NAS Study "Achieving High Performance Federal Facilities: Strategies and Approaches for Transformational Change", GSA has begun to implement changes as recommended by that report. The Key Findings from the "September 2011 Workshop on Performance Based Contracting and Integrated Work Practices" included:

- Process of getting projects in place can be greatly compressed – With ARRA, GSA compressed process from 9 months to 2 weeks
- Focus on what performance the building must achieve and let the contractor figure out how to do this
- Integration and collaboration should have many forms – across time, activities, and groups
- Need to educate all the players about the design/build process
- Need to identify the next great purpose/initiative – sense of urgency seems to be a critical factor; tendency to revert to old behavior when urgency is gone
- Need to identify and focus on key leverage points – procurement, budgeting, and business practices

The effect of steamlining the contracting process has reduced ESPC negotiations from 15 months down to 4 months resulting in lower costs to the ESCOs and the federal building owners.

The workshop recommendations included:

- Codify and share lessons from GSA's ARRA projects, Pentagon renovation project, and NREL's Research Support Facility
- Initiate a Planning Excellence Program within GSA
- Create training on performance-based best practices (to include D/B execution, performance specifications, risk management, project communications, mentoring)
- Create a clear leadership vision to define a common goal, reduce uncertainty, and advance understanding – similar to ARRA's "*On Budget, On Time, On Green"*

Behavioral Issues: Jerry Dion (DOE/FEMP) provided an overview of the task group activities on factors that change institutional rules and culture that can result in significant and persistent behavioral change of occupants. The task group for behavioral issues has convened via conference calls on multiple

occasions. The group is focusing on evidence-based approaches for persistent behavioral modification and strategies for changing occupant and institutional cultures.

To date, the group has developed an annotated reading list. The next deliverable will be a conceptual framework for behavioral strategies. The framework will be developed by the task group members that includes DOD, GSA, and Nat'l Labs research staff.

Commissioning: Natasha Milesi-Ferretti (NIST) provided a presentation titled "Developing Commissioning Categories for BTRD Survey on Commissioning in Government Buildings" that contained an overview of the goals for commissioning survey, definitions of commissioning by PECI, ASHRASE and IEA's Annex 47.

The process of commissioning spans the pre-design phase, through design and construction to the occupancy and operations phases. Retrocommissioning follows a different process, with a focus on planning, investigation, implementation, and hand-off. While these formal definitions provide value, often facility staff perform selected procedures on a subset of systems.

EIA Annex 47 had developed a comprehensive survey in 2007 that was broadly distributed internationally. This survey will be leveraged in BTRD task group activities as appropriate.